

Creating an Ambulatory Integrated Computerized Medical Information System: Joint Development by Client and Vendor

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Background: Crozer-Keystone Health System (CKHS), a \$450 million not for profit integrated delivery system, identified the need for integrated clinical information including ambulatory care, in 1990 and developed a strategic partnership with Shared Medical Systems (SMS) in 1992 to manage its informatics needs and create such a system. This Poster and Demonstration will review the steps associated with that partnership, including the development assumptions, and processes required in creating the ambulatory computerized patient record (CPR). Infrastructure requirements and implementation strategies will be reviewed. The CPR will be demonstrated.

System Description: The needs of CKHS, like all emerging systems, include the capture of comprehensive patient data transformed into information, communication among providers of care, promulgation of standards, protocols and care tracks, provision of just in time information and decision support, and analysis of care vs. outcomes by provider. The needs of SMS, traditionally a hospital based vendor, has been to create healthcare systems clinical solutions. The strategic alliance provided a way for both to share risk, communicate needs and resources, and develop the product.

The development process has taken four years, with extensive efforts towards standardization of technology and of user issues. Substantial delays occurred as interface of both legacy and new programs proved more complex than expected, and as getting multiple hospitals and users to agree was cumbersome. The methods successfully employed will be reviewed

The product consists of a clinical data repository collecting data from connected computer sources including all customary hospital sources as well

as outside lab and (soon) managed care organizations. The ambulatory CPR collects practice management and billing information, vital signs and on-site lab, documentation of the visit, orders and patient education. It provides decision support, just in time information, specialized flow sheets, scheduling and communication applications, and web/Internet access.

The implementation process involved alpha and beta testing at family medicine and internal medicine residency training sites while studying re-engineering issues. Satisfying the complexity of multiple providers, students, residents and nurse practitioners tested the system. Based on the lessons learned, the ambulatory CPR is being placed in hospital owned primary care sites.

Evaluation: Evaluation of point of care devices necessary to make utilization of the CPR by providers and staff is underway with objective standards for recommendations for desktop, wireless, and palmtop devices. Before and After Re-engineering studies are evaluating both the process of change and the impact on job function. Clinical Outcomes studies are limited when (billing) ICD-9 coding is used and a larger study of Read Coding is planned.

Conclusions: The joint development process has been effective, and a system based on the needs of the clinician in caring for patients developed and implemented. The process is complex and collaboration essential to success. The CPR is demonstrated. . The absence of a national coding and classification standard stands in the way of effective outcomes studies across systems and sites.

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